

NEW SPECIES OF *Echeandia* (LILIACEAE) FROM OAXACA, MEXICO

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ABSTRACT

Twelve new species and seven new combinations in *Echeandia* (Liliaceae) are proposed. The new species are endemic to the states of Oaxaca and/or Puebla or Guerrero.

KEY WORDS: *Echeandia*, Liliaceae, México

The following new species and new combinations are proposed to aid the study of the flora of México, especially that of Oaxaca and adjacent states. Nine of the proposed species are endemic to Oaxaca and three occur in Oaxaca and adjacent Puebla or Guerrero.

***Echeandia konzattii* Cruden, sp. nov.** TYPE: MEXICO. Oaxaca: Lomas de las Sedas, Dist. Ella, 1950 m, 18 Oct 1933, *Konzatti 4985* (HOLOTYPE: MO!; Isotype: US!).

Radicibus penaris ab cormo 4-6 cm, foliis basalibus anguste linearibus ciliatis, tepalis albis, antheris connatis 2.5-3.5 mm latis, filamentis squamosis.

Storage roots numerous, slender, most probably developing 4-6 cm from corm. Scape glabrous or scabrescent toward the base, 35-80 cm high, 0-3 branches. Basal leaves 4-6(-8), 27-67 cm long, 2-6 mm wide, papillate on veins on lower leaf surface, margin ciliate. Cauline leaves 2-4, the lower long apiculate. Tepals white, 10.5-13.5 mm long. Anthers connate, 4-5(-7) mm long, 2.0-3.5 mm wide. Filaments scaled, narrowly clavate, 4.5-6.0(-8.0) mm long. Ovaries 2.0-3.5 mm long. Capsules 8.5-11 mm long. In flower August-October.

Additional Specimens Examined: MEXICO. Guerrero: W of Taxco, between Casahuates and reservoir above town, 6200-6500 ft, 17 Aug 1948, *Moore & Wood 4589* (MICH). Oaxaca: Type locality: 6000 ft, 1 Aug 1894, *Pringle 5755* (GH); 8 Sept 1894, *Smith 742* (MO, NY, US); Jayacatlán, 5000 ft, 10 Sept 1894, *Smith 188* (GH); Cerro San Blas, Huaucuililla, Dist. Nochixtlán, 2200 m, 14 Oct 1921, *Conzatti 4274* (US).

The quite broad, open anther cone and the narrow basal leaves with papillae on the veins distinguish this species from other white flowered Mexican species.

Echeandia smithii Cruden, *sp. nov.* TYPE: MEXICO. Oaxaca: ca. 3 km E Ixtlán de Juárez, ca. 2250 m, in oak woods with *Pinguicula*, *Coreopsis*, *Dahlia*, *Polypodium*, *Cuphea*, 24 Oct 1975, *Cruden 2263* (HOLOTYPE: UC!; Isotypes: GH!, K!, MEXU!, US!).

Radicibus penaris juxta cormum, scapo glabro, foliis basalibus anguste linearis denticulatis 3-7, tepalis flavis, antheris connatis, filamentis squamosis.

Storage roots next to the corm, 1.5-3.0 cm long. Scape glabrous, 40-85 cm high, 0-1(-3) branches. Flower bearing nodes 4-9. Basal leaves 3-6(-7), narrowly linear, denticulate, 23-58 cm long, 2-4(-6) mm broad. Cauline leaves 2-4, lower 3-25 mm long. Tepals yellow, elliptic, 12-16 mm long, inner 5-6 mm wide, outer 2-3 mm wide. Anthers connate, 5.5-8.5 mm long, usually 2 mm longer than the filaments, tip of the cone 0.4-0.8(-1.2) mm in diameter and 1/5 to 1/2 the diameter of the cone. Filaments scaled, clavate, 4-5 mm long. Ovaries 4.5-6.0 mm long. In flower late August-early December. Chromosome number $n=8$ (*Cruden 2263*).

Additional Specimens Examined: MEXICO. Oaxaca: Sierra de San Felipe, 9000-10000 ft, Sep-Oct 1894, *Smith 747* (F-2 sheets, MO, NY-2 sheets, US); Ixtlán de Juárez, E side of mountain, 2400 m, 6 Dec 1940, *Krueger & Gillespie 42* (CAS, GH, LL, MO); Ruta 175, K 160, nr Ixtlán, 300-700 m(?), 28 Aug 1974, *Conrad & Conrad 3171* (MO).

The narrowly linear leaves and strongly tapered anther cone, which is noticeably longer than the filaments, distinguish this species from other yellow flowered Mexican species with connate anthers and storage roots close to the corm.

Echeandia vaginata Cruden, *sp. nov.* TYPE: MEXICO. Oaxaca: Ruta 190, K 132, ca. 40 km SE Nochixtlán, oak woods with *Dahlia*, *Cosmos*, *Tigridia*, *Cuphea*, *Salvia*, *Tradescantia*, *Donnellsmithia*, *Bouvardia*, ca. 2240 m, 6 Sep 1971, *Cruden 1946* (HOLOTYPE: UC!; Isotypes: ENCB!, GH!, K!, MEXU!, MICH!, MO!, NY!, US!).

Radicibus penaris ab cormo (3-)7-10 cm, scapo pubescenti, foliis basalibus anguste ellipticis ciliatis ad bases undulatis 6-15 mm latis, tepalis flavis, antheris connatis, filamentis squamosis.

Storage roots (3-)7-10 cm from corm, 0.5-2.0 mm long. Scape pubescent, usually throughout, sometimes nearly glabrous, 46-80 cm high, 0-1 branches. Basal leaves 3-5, narrowly oblanceolate, margin ciliate to long ciliate and narrowly undulate toward the base, 17-32 cm long, 6-15 mm wide. Cauline leaves 2-3, ciliate. Tepals yellow, elliptic, 13.5-16.0 mm long, inner 6-8 mm wide, outer 3-4 mm wide. Pedicels 9-12(-14) mm long. Anthers 6-8 mm long, cone barrel shaped or weakly tapered, usually abruptly narrowed to the tip. Filaments of equal width throughout or somewhat wider in the middle, with short, narrow scales, 4.0-5.5 mm long. Ovaries 2.5-3.5 mm long. Capsules oblong, 8-10 mm long, 4 mm wide. In flower late June-early September. Chromosome number $n=8$ (Cruden 1946).

Additional Specimens Examined: MEXICO. Oaxaca: Ruta 190, K 494, ca. 20 km W of Huitzo, ca. 2150 m, 27 Jul 1968, Cruden 1422 (ENCB,US); Mpio. Juchatengo, San Pedro Juchatengo, 1500 m, 13 Dec 1983, Solheim, Benz, & Hallberg 1137 (WIS).

This is the only yellow flowered species of *Echeandia* with connate anthers that has a pubescent stem and relatively broad basal leaves that are long ciliate.

Echeandia montealbanensis Cruden, *sp. nov.* TYPE: MEXICO. Oaxaca: Monte Albán, on the ruins, with *Agave*, *Spiranthes*, *Tradescantia*, ca. 1950 m, 5 Sep 1971, Cruden 1944 (HOLOTYPE: UC!; Isotypes: ENCB!,F!,GH!,K!,MEXU!,MO!,NY!,US!).

Radicibus penaris ab cormo 5-8 cm, scapo scabro, foliis basalibus late linearibus 3-6, tepalis flavis, antheris libris, filamentis parvisquamosis.

Storage roots 2.5-5.0 cm long, 5-8 cm from corm. Scape strongly scabrous in lower half, less so above, 0.4-1.2 m high, 0-3(-6) branches. Basal leaves 3-6, broadly linear to oblanceolate, entire to short ciliate, 19-82 cm long, 12-26 mm wide. Cauline leaves (2-)3-4(-5), lower 8-35 cm long. Flowers yellow, facing outward, with the style passing below the stamens and bent upward near the apex. Tepals 9-13 mm long, inner 5.0-6.5 mm wide, outer 3 mm wide. Anthers 2.0-2.5(-3.0) mm long, rarely versatile, in most flowers the edges of the anther sacs reflexed and flattened against each other, thus holding the anthers in the same direction as the filaments. Filaments of equal width throughout, with small scales, inserted in an open depression, 4.0-6.0 mm long. Ovaries 2.0-3.5

mm long. Capsules oblong, 10.5-12.5 mm long, 4.5-6.0 mm wide. In flower mid July-mid October. Chromosome number $n=8$ (Cruden 1944).

Additional Specimens Examined: MEXICO. Oaxaca: Cerro de San Felipe, 2000 m, 1895, *Conzatti 135* (GH); Almoloya, 14 Jul 1910, *Rusby 143* (NY,US); Monte Albán: 27 Jul 1976, *Willemse 46* (U); 20 Jul 1947, *Conzatti, Rowell, & Barkley 17M395* (TEX); 89 km S Teotitlán, on road to Oaxaca, 1500 m, 10 Oct 1983, *Anderson 12985* (MICH).

The pubescent scape, several cauline leaves, lightly scaled filaments, and nonversatile anthers distinguish this relatively robust species from the smaller *Echeandia vestita* (Baker) Cruden.

***Echeandia tenuifolia* Cruden, sp. nov.** TYPE: MEXICO. Oaxaca: Ruta 190, ca. 14 km SE Huajuapán de León, on dry hillside with various cacti, *Milla*, and Compositae, 1850 m, 11 Jul 1968, *Cruden 1372* (HOLOTYPE: UC!; Isotypes: ENCB!,GH!,K!,MEXU!,MO!).

Radicibus penaris ab cormo 2-6 cm, scapo glabro vel ad basim scabrello, foliis basalibus anguste linearibus 1-2 mm latis, tepalis flavis, antheris libris, filamentis filiformis laevibus.

Storage roots 2-6 cm from the corm, 1-2 cm long. Scape glabrous or scabrelus near the base, 25-47 cm high, 0-2(-3) branches. Basal leaves narrowly linear, falcate, 5-20 cm long, 1-2 mm wide, margins entire to short ciliate. Cauline leaves 1-3, reduced to scarious bracts. Tepals yellow, (6-)8-10 mm long, inner (3.5-)4.0-5.5 mm wide, outer (1.5-)2.0-3.0 mm wide. Anthers free, versatile, (1.2-)1.5-2.5 mm long. Filaments filiform, smooth (1.9-)2.5-3.5 mm long, inserted in an open depression. Ovaries 1.25-1.75 mm long. In flower June-July. Chromosome number $n=8$ (Cruden 1972, 1531).

Additional Specimens Examined: MEXICO. Oaxaca: ca. 19 km SE Huajuapán de León, 1790 m, 17 June 1969, *Cruden 1531* (ENCB,K,UC); 3.5 km NNE Magdalena Jicotlán, ca. 2150 m, 19 Jul 1968, *Cruz C. 1874* (ENCB).

This species might be confused with the widespread *Echeandia flavescens* (Schultes & Schultes) Cruden, which has larger flowers, a noticeably larger ovary, and scaled filaments.

***Echeandia llanicola* Cruden, sp. nov.** TYPE: MEXICO. Oaxaca: wet meadow near the old Vivero Forestales, ca. 79 km ENE Oaxaca, ca. 2800 m, with *Eryngium*, *Ranunculus*, 15 Jul 1968, *Cruden 1386* (HOLOTYPE: UC!; Isotypes: ENCB!,F!,GH!,K!,MEXU!,MICH!,MO!,NY!,US!).

Radicibus penaris juxta cormum, scapo glabro aramoso, foliis basalibus anguste ovatis ciliatis, floribus flavis solitariis 1-6, antheris libris vel connatis, filamentis squamosis.

Storage roots next to corm, 1-2(-3) cm long. Scape glabrous, unbranched, 4-24 cm high, bearing 1-4(-6) flowers. Basal leaves 6-10, falcate, narrowly ovate, 6-18 cm long, 5-11 mm wide, margins ciliate, Cauline leaves 0(-1), when present reduced to a bract. Bracts subtending the flowers entire, each subtending a single flower. Tepals yellow, elliptic, 12-15 mm long, inner 5.0-6.5 mm wide, 2.5-4.0 mm wide. Anthers free or connate, introrse, 2.2-3.2 mm long, curved toward the apex, not versatile, opposite or enclosing the stigma. Filaments of equal width throughout, scaled, 5-6(-7) mm long. Ovaries 2-4 mm long. Capsules oblong, 13-14 mm long, 4-5 mm wide. In flower July. Chromosome number $n=16$ (Cruden 1984, 1986).

Additional Specimens Examined: MEXICO. Oaxaca: Llano de las Flores, Ruta 175, ca. 82 km NE Oaxaca, ca. 2800 m, 15 Jul 1968, Cruden 1984 (ENCB,GH,K,MEXU,MO,UC); 8 km SE Guacamaya, Mpio. Santiago-Teococuilco, 2600 m, 14 Jul 1985, Rodriguez 193 (WIS).

The flat, nonfalcate leaves are reminiscent of some *Echeandia skinneri* (Baker) Cruden and *E. durangensis* (Greenman) Cruden. The former has pubescent scapes and smooth filaments and the leaf margins of the latter are denticulate to short ciliate rather than ciliate.

***Echeandia hallbergii* Cruden, sp. nov.** TYPE: MEXICO. Oaxaca: roadside ca. 3 km E Ixtlán de Juárez, with *Commelina*, *Tradescantia*, *Oxalis*, *Salvia*, under *Quercus*, ca. 2150 m, 14 Aug 1970, Cruden 1764 (HOLOTYPE: UC!; Isotypes: ENCB!,F!,GH!,K!,MEXU!,MICH!,MO!,NY!,UC!,US!).

Radicibus penaris ab cormo 2-6 cm, scapo pubescenti, foliis basalibus anguste obovatis falcatis longiciliatis, tepalis flavis, antheris libris versatilis, filamentis laevibus vel paucisquamosis.

Storage roots (1.5-)2.5-5.0(-6.0) cm from corm, 1-2 cm long. Scapes 1-2 (-3) pubescent, at least near the base, 6-29(-37) cm high, unbranched. Basal leaves narrowly obovate, falcate, margin with long flat cilia, lower surface with scattered hairs or glabrous, 5-13(-23) cm long, (1.5-)3.0-12 mm wide, Cauline leaves 0(-1), when present reduced to a bract. Bracts subtending the flowers ciliate. Tepals elliptic, yellow, (9-)11-14 cm long, inner 5.0-6.5 mm wide, outer 2.5-4.0 mm wide. Anthers free, versatile, 1-2 mm long, twisted when open. Filaments slender, of equal width throughout, smooth or rarely with a few, small scales, (3.5-)4.5-6.0 mm long. Ovaries 2-4 mm long. Capsules subglobose, 6-8 mm long, 4-5 mm wide. In flower mid-June to July. Chromosome number $n=16$ (Cruden 1978) and $n=32$ (Cruden 1764).

Additional Specimens Examined: MEXICO. Oaxaca: Ruta 190, K 482-483, ca. 41 km SE Nochixtlán, ca. 2250 m, 12 Jul 1968, Cruden 1978 (ENCB,GH,

K,MO,UC,US); Camino Montelobos, nr Pueblo Viejo, 2500 m, 22 Jun 1907, *Conzatti 1903* (F,MEXU); Vivero Rancho Teja, ca. 3 mi E Ixtlán de Juárez, ca. 2150 m, 14 Jul 1968, *Cruden 1382* (F,GH,K,MEXU,MO,NY,UC,US); above Vivero Rancho Teja, 2100-2200 m, 10 Jul 1973, *McPherson 708* (MICH); 24 Jul 1973, *McPherson 832* (MICH); Peñoles, 7500 ft, 1840, *Galeotti 5369* (BR); Natividad Road NE of Oaxaca, 28 Jul 1947, *Kenoyer 1605* (GH); Distr. de Ixtlán, 5 km NW el Cerezal, carretera Guelatao a las Animas, 2170 m, 29 Jul 1981, *Trigos, Lorence, & Garcia 862A* (MO).

The glabrous to nearly glabrous leaf surfaces distinguish *Echeandia hallbergii* from *E. vestita*, which has hirsute leaf surfaces.

***Echeandia parva* Cruden, sp. nov.** TYPE: MEXICO. Oaxaca: Ruta 190, palmwoodland, ca. 7.5 km NW Huajuapán de León, 1820 m, 14 Jul 1969, *Cruden 1622* (HOLOTYPE: UC!; Isotypes: F!,GH!,K!,MEXU!,NY!,US!).

Radicibus penaris ab cormo 1-4 cm, scapo pubescenti, foliis basalibus linearibus longiciliatis apicibus recurvis infra papillosa, tepalis albis, antheris libris aversatilis, filamentis laevibus.

Storage roots 1-4 cm from corm, 1-2 cm long. Scapes 1-2, pubescent, 6-28 cm high, 0-1 branches. Basal leaves linear, strongly recurved toward the tip, margins long ciliate, veins on underside densely papillate, 6-20 cm long, 2-6 mm wide. Cauline leaves 0-1, reduced to a scarious bract. Tepals white, elliptic, 8-12 mm long, inner 4-5 mm wide, outer 2.5-3.5 mm wide. Anthers free, nonversatile 1.2-2.0 mm long. Filaments of equal width throughout, smooth, 3.5-5.5 mm long. Ovaries 1.5-2.0 mm long. Capsules subglobose, 4.5-7.0 mm long, 4.0-4.5 mm wide. In flower July. Chromosome number $n=8$ (*Cruden 1367, 1622*).

Additional Specimens Examined: MEXICO. Oaxaca: Ruta, 190, ca. 10 km NW of Huajuapán de León, 1850 m, 26 Jul 1968, *Cruden 1415* (ASU,F,K,MEXU, MICH,MO,TEX,UC,WIS). Puebla: Ruta 190, 0.5-1.0 km NW Oaxaca border, 10 Jul 1968, *Cruden 1367* (BM,CAS,ENCB,GH,MICH,MO,NY,UC,US); Chila-Zapotitlán, 15 Jul 1943, *Miranda 2832* (MEXU).

This small white flowered species is known only from open palm woodlands NW of Huajuapán de León. The short, many flowered, pubescent scapes and long ciliate leaves with strongly recurved tips are distinctive.

***Echeandia confertiflora* Cruden, sp. nov.** TYPE: MEXICO. Oaxaca: Ruta 190, ca. 10 Km NW Huajuapán de León, palm woodland with *Nolina*, *Tigridia*, *Castilleja*, *Echeandia*, 1850 m, 11 July 1968, *Cruden 1370* (HOLOTYPE: UC!).

Radicibus penaris ab cormo 4-8 cm, scapo pubescenti, foliis basalibus numerosis longiciliatis infra papillosa vel sparsam pubescentia, tepalis albis, antheris libris aversatilis, filamentis squamosis.

Storage roots 4 or more cm from base of scape, 1-3 cm long. Basal leaves numerous, long ciliate, veins on lower surface papillate or with scattered long hairs, glabrous above, 8-15 cm long, 2-6 mm wide. Scapes 1-2, approximately 30 cm high, pubescent, with 0-4 branches. Cauline leaves absent. Inflorescence bracts ciliate to long ciliate. Flowers white with brown veins, facing outward. Tepals elliptic, 10-11 mm long. Anthers 2.5 mm long, not versatile. Filaments scaled, 4.5-5.0 mm long. Ovaries 1.5-2.0 mm long. Capsules oblong, 9-10 mm long, 4-5 mm wide. In flower mid-June to mid-July.

Additional Specimen Examined: MEXICO. Oaxaca: 30 miles S Nochixtlán, 7500 ft, 1 Jul 1947, *Johnston s.n.* (TEX).

This species might be confused with the smaller *Echeandia parva*, which has smooth filaments and smaller capsules.

Echeandia grandiflora Cruden, *sp. nov.* TYPE: MEXICO. Oaxaca: Ruta 190, K 110, ca. 32 km E Totolapan, steep hillside in *Pachycereus*, *Bursera* woodland, with *Oxalis*, *Lantana*, *Tradescantia*, other cacti, 800 m, specimen flowered in greenhouse 12 Nov 1976, *Cruden 1762* (HOLOTYPE: UC!).

Radicibus penaris ab cormo 1-2 cm, scapo glabro, foliis basalibus anguste obovatis breve ciliatis, tepalis flavis, antheris libris versatilis, filamentis squamosis 11.0-13.5 mm longis.

Storage roots 1-2 cm from the corm, 2-3 cm long. Scape glabrous, to 75 cm high, 0-2 branches. Basal leaves narrowly obovate, 25-45 cm long, 11-25 mm wide, margin short ciliate. Cauline leaves 2-5, reduced upwards. Tepals yellow, elliptic, 16-21 mm long, inner 6-8 mm wide, outer 3.5-5.0 mm wide. Pedicels to 15 mm long in flower, to 21 mm long in fruit. Anthers free, versatile, 2-4 mm long. Filaments of equal width throughout, scaled, inserted in an open depression, 11.0-14.5 mm long. Ovaries (2.0-)3.5-5.0 mm long. Style bent upward at the tip. Capsules oblong, to 18 mm long and 5 mm wide, Chromosome number $n=8$ (*Cruden 1762*).

Additional Specimen Examined: MEXICO. Oaxaca: Ruta 190, 16-17 km W Tequisistlán, ca. 730 m, *Cruden 1941* (ENCB), flowered in greenhouse.

The description of this species is based on plants that flowered in a greenhouse at the University of Iowa. The leaves of these were small compared to those of plants collected in the wild. It is quite likely the scapes are likewise reduced in size, and that plants encountered in the wild may be more robust than the description indicates. The cauline leaves, which dry white, and

the extremely long filaments are reminiscent of *Echeandia tenuis* (Weatherby) Cruden and *E. imbricata* Cruden, which have basal leaves that are 1-6 mm wide and smaller capsules.

Echeandia oaxacana Cruden, *sp. nov.* TYPE: MEXICO. Oaxaca: Ruta 190, K 148-149, ca. 50 km WNW Tequisistlán, along stream in oak woods with *Commelina*, *Tradescantia*, ca. 1250 m, 4 Sep 1971, Cruden 1943 (HOLOTYPE: UC!; Isotypes: ENCB!,F!,GH!,K!,MEXU!,US!).

Radicibus penaris ab cormo 1-2 cm, scapo scabro prope basin, foliis basalibus anguste oblanceolatis breviciliolatis 3-5, tepalis albis, antheris connatis, filamentis squamosis.

Storage roots 1-2 cm from corm, 1.5-3.0 cm long. Scape scabrous toward the base, 60-95 cm high; branches 0-1(-2), Basal leaves 3-5, narrowly oblanceolate, 38-65 cm long, 6-12 mm wide, margins short ciliate. Cauline leaves 2-4, reduced to long narrow bracts. Flowers white, opening in late morning. Tepals narrowly elliptic, 11-14 mm long, inner 3-4 mm wide, outer 1.5-2.0 mm wide. Anthers connate, cone strongly tapered, usually longer than the filaments, 5.5-7.0 mm long. Filaments clavate, scaled, 5.5-6.0 mm long, Ovaries 3-4 mm long. Capsules oblong, 9-12 mm long, 5-6 mm wide. In flower August-September. Chromosome number $n=8$ (Cruden 1761).

Additional Specimens Examined: MEXICO. Oaxaca: Topotype, 13 Aug 1970, Cruden 1761 (NY,TEX,WIS).

The combination of white flowers, anther cone that is slightly longer than the filaments, scabrous scape, narrow basal leaves, and tightly clustered tubers, distinguishes this species from other Mexican species.

Echeandia mirandae Cruden, *sp. nov.* TYPE: MEXICO. Oaxaca: 10.6 km NE Teotitlán del Camino on rd to Huautla de Jiménez, oak woods with cycads, cacti, *Agave*, *Castilleja*, *Commelina*, ca. 1790 m, 16 Aug 1970, Cruden 1774 (HOLOTYPE: UC!; Isotypes: ENCB!,F!,GH!,K!,MEXU!,MICH!,MO!,NY!,US!,WIS!).

Radicibus penaris ab cormo 3-15 cm, scapo scabro, foliis basalibus anguste oblanceolatis falcatis breviciliatis, tepalis albis, antheris libris aversatilis ad apices dehiscentes, filamentis paucisquamosis.

Root tubers 3-15 cm from corm, 1.5-3.5 cm long. Scape scabrous, 38-80 cm high, 0-6 branches. Basal leaves 5-10, narrowly oblanceolate, falcate, 12-40 cm long, 8-32 mm wide, margins short ciliate. Cauline leaves 1-3, reduced to

bracts. Flowers white, opening in late morning. Tepals 7-8 mm long, inner 3.0-3.5 mm wide, outer 1.5-2.0 mm wide. Anthers free, nonversatile, dehiscent through apical slits, 3-4 mm long. Filaments of equal width throughout, scaled, with a few weakly developed scales, or roughened, inserted in a pocket, 3-5 mm long. Ovaries 1.0-2.0(-2.5) mm long, Capsules oblong, 8-9 mm long, 5 mm wide. In flower June-August. Chromosome number $n=8$ (Cruden 1962, 1774).

Additional Specimens Examined: MEXICO. Puebla: Ruta 140, K 149-150, ca. 7 km SE Puebla-Morelos state line, ca. 1300 m, 10 Jul 1968, Cruden 1362 (ENCB,F,GH,K,MEXU,MO,NY,TEX,UC,US); Amatitlán, NE Matamoros, 30 Jul 1942, Miranda 2174 (GH).

This species might be confused with *Echeandia pihuamensis* Cruden, which has glabrous scapes and smooth filaments.

NEW COMBINATIONS

Echeandia longifolia (Weatherby) Cruden, *stat. nov.* BASIONYM: *Echeandia macrophylla* Rosa var. *longifolia* Weatherby, Proc. Amer. Acad. Arts 38:391. 1910. TYPE: MEXICO. Oaxaca: vicinity of Choapan, 3800-4500 ft., 28-29 Jul 1894, Nelson 910 (HOLOTYPE: US!; Isotype: US!).

Echeandia echeandioides (Schlechtendal) Cruden, *comb. nov.* BASIONYM *Trachyandra echeandioides* Schlechtendal, Bot. Zeit. 3:629. 1845.

Echeandia eleutherandra K. Koch, Ind. Sem. Hort. Berol. App. 4 1861. TYPE: not examined. (not at B, destroyed?). *Anthericum eleutherandrum* (K. Koch) Moore. Gentes Herbarium 8:246. 1951.

Anthericum echeandioides Baker, Curtis' Bot. Mag. t. 6809. 1885. TYPE: Hort. Kew. Nov. 1883. (HOLOTYPE: K!).

Echeandia michoacensis (von Poellnitz) Cruden, *comb. et stat. nov.* BASIONYM: *Anthericum platyphyllum* Greenman var. *michoacense* von Poellnitz, Rev. Sudamer. Bot. 7:158. 1943. TYPE: MEXICO. Michoacán: Punguato, vicinity of Morelia, 1950 m, 18 Aug 1910, Arsène 5274 (LECTOTYPE: MO!; Isotypes: GH!,US!).

Echeandia drepanoides (Greenman) Cruden, *comb. nov.* BASIONYM: *Anthericum drepanoides* Greenman, Proc. Amer. Acad. Arts 39:71. 1903. TYPE: MEXICO. Oaxaca: Sierra de San Felipe, 6000 ft, 6 Aug 1894, Pringle 5757 (GH!).

Echeandia platyphylla (Greenman) Cruden, *comb. nov.* BASIONYM: *Anthericum platyphyllum* Greenman, Proc. Amer. Acad. Arts 33:472. 1898.

TYPE: MEXICO. Puebla: dry limestone ledges, Tehuacán, 5000 ft, 29 Jul 1897, *Pringle 6680* (HOLOTYPE: GH!; Isotypes: BM!, ENCB!, ISC!, MEXU!, MO!, NY!, UC!, US!).

Echeandia chandleri (Greenman & Thompson) Cruden, *comb. nov.* BASIONYM: *Anthericum chandleri* Greenman & Thompson, Ann. Missouri Bot. Gard. 1:405-406. 1914. TYPE: UNITED STATES. Texas: Cameron County: vicinity of Rio Hondo, Sep 1913, *Chandler 7059* (MO!).

Echeandia tenuis (Weatherby) Cruden, *comb. nov.* BASIONYM: *Anthericum tenue* Weatherby, Proc. Amer. Acad. Arts 45:422. 1910. *Anthericum leptophyllum* Benth. var. *tenue* (Weatherby) von Poellnitz, Rev. Sudamer. Bot. 7:158. 1943. TYPE: MEXICO. Guerrero: between Ayusinapa and Petatlán, 5000-7000 ft, 14 Dec 1894, *Nelson 2120* (US!).

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